

Letters to the Editor

Respiratory disease and temperature are correlated with
suicide in Mie Prefecture, Japan

To the Editor,

The number of suicides in Japan has been increasing.¹ It has increased from approximately 22,000 per year between 1988–1997 to over 30,000 per year since 1998. A similar increase has been observed in Mie Prefecture. We think that there are several factors that have contributed to the increase in the number of suicides. We were able to obtain and analyze detailed data on suicides to investigate the causes in Mie Prefecture, Japan. Here in this report, we discussed correlations between suicide and two factors, one is respiratory disease and another is temperature. The statistical analysis was performed using Fisher's exact test and single regression analysis.

Fujita² described that there was a little the number of annual seeking diagnosis among department of respiratory with the 7th (1126 per year) in 9 department of internal medicine (23,258 per year) among somewhere hospital. Hosaka³ showed that among the physical diseases, respiratory disease was one of the suicidal risks; however, the details of the background and the circumstances were not reported. Hence, although the ratio of respiratory disease related suicides to physical disease related suicide was low, the number of suicides due to respiratory diseases was high.^{2,3} Therefore, it is important to elucidate the detailed relationship between respiratory disease and suicide. Here, we examined the incidence and the circumstances of all cases of suicide that were reported to the Mie Prefectural Police Headquarters during 1996–2002. We discussed the past histories of physical diseases of the victims and focused on the details of respiratory diseases. We classified the patients suffering from physical illnesses in the form of respiratory disease into those with and without malignant neoplasms.

During the test period, 1979 male and 969 female suicides were reported, resulting in a male/female ratio of approximately 2:1. Among the causative factors, the number of suicides related to physical illnesses was 1452 (866 males, 586 females). The number of suicides related to physical illness, particularly respiratory disease was 72 (53 males, 19 females). The association between respiratory disease and suicide among male patients was statistically significant ($P < 0.05$). The number of suicides among the

respiratory disease cases, with and without malignant neoplasm was 18 (13 males, 5 females) and 54 (40 males, 14 females), respectively. The most common cases of respiratory diseases were pulmonary emphysema (12 cases) in males and bronchial asthma (5 cases) in females. The incidence of suicide in respiratory disease cases (males and females) with and without malignant neoplasm was statistically significant (male: $P < 0.01$, female: $P < 0.05$).

Therefore, we conclude that we should pay more attention to suicide in male patients with respiratory disease. It is notable that patients with respiratory diseases without malignant neoplasm are at a high risk of suicide. Medical staff who treat patients with respiratory disease must be careful with regard to the mental state of the patients.^{4,5}

Among one of the several factors, there are a few conventional reports that showed a correlation between suicide and ecological factors.^{6,7} There is considerable diversity in the results of these reports, in that, some studies have shown that suicide is related to annual average temperature, humidity, and duration of daylight hours in a year, while some have failed to show any correlation between them.^{6–8}

We investigated all the inquest records made during 1989–2002 in Mie Prefecture. Among the ecological factors, we recorded the average atmospheric pressure, temperature, humidity, rainfall, and duration of daylight hours in a year in Tsu at the Prefectural office during 1989–2002 in cooperation with the Tsu meteorological observatory of Mie Prefecture. In both sexes, we then calculated the correlation between the ecological factors and the annual suicide rates in Mie Prefecture during the test period.

During the test period, the number of suicides was 3276 and 1772 in males and females, respectively. The gender-specific suicide rates were 26.2 males and 13.4 females per 100,000 during the test period ($P < 0.05$). The results that the correlation between the annual suicide rates and the ecological factors in Mie Prefecture are shown in Tables 1a and 1b. The annual suicide rates in females correlated significantly with the average temperature. The annual suicide rates in males and females did not correlate with the average atmospheric pressure, humidity, rainfall, and

Table 1a

The results that the correlation between the annual suicide rates in males and the ecological factors in Mie Prefecture, Japan

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
<i>r</i>	0.44	0.39	0.23	0.07	0.11
<i>p</i>	0.11	0.16	0.43	0.81	0.70

a: Average atmospheric pressure in a year (hpa).

b: Average temperature in a year (°C).

c: Average humidity in a year (%).

d: Average rainfall in a year (mm).

e: Average duration of daylight hours in a year (hours).

Table 1b

The results that the correlation between the annual suicide rates in females and the ecological factors in Mie Prefecture, Japan

	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>
<i>r</i>	0.04	0.62	0.13	0.01	0.12
<i>p</i>	0.89	0.02	0.65	0.97	0.69

a: Average atmospheric pressure in a year (hpa).

b: Average temperature in a year (°C).

c: Average humidity in a year (%).

d: Average rainfall in a year (mm).

e: Average duration of daylight hours in a year (hours).

duration of daylight hours. In addition, the annual suicide rates in males did not correlate with the average temperature. Deisenhammer et al.⁹ assessed official data regarding suicide cases in the states of Tyrol, Austria over a period of 6 years ($n = 702$). They showed that the risk of committing suicide was significantly higher on days when higher temperatures were recorded. Our results resemble it with their reports. Therefore, the Administration, police, medical staff, and the general public must understand and be aware of the significant association between temperature and suicidal risk in females.

References

1. Fujisawa D, Tanaka E, Sakamoto S, et al. The development of a brief screening instrument for depression and suicidal ideation for elderly: the depression and suicide screen. *Psychiat Clin Neurosci* 2005;**59**:634–8.
2. Fujita Y. The correlation between physical disease and death. Fujita Hospital meeting. 2004.
3. Hosaka T. Suicidality on non-psychiatric ward. *Suicide Emergen Med*:39–42. in Japanese.
4. Jacobson L, Churchill R, Donovan C, et al. Tackling teenage turmoil: primary care recognition and management of mental ill health during adolescence. *Fam Pract* 2002;**19**:401–9.
5. Inoue K, Tanii H, Fukunaga T, et al. Causes and prevention of suicide in Mie Prefecture, Japan. *IMJ* in press.
6. Petridou E, Papadopoulos FC, Frangakis CE, et al. A role of sunshine in the triggering of suicide. *Epidemiology* 2002;**13**: 492–3.
7. Linkowski P, Martin F, De Maertelaer V. Effect of some climatic factors on violent and non-violent suicides in Belgium. *J Affect Disord* 1992;**25**:161–6.
8. Tietjen GH, Kripke DF. Suicides in California (1968–1977): absence of seasonality in Los Angeles and Sacramento counties. *Psychiat Res* 1994;**53**:161–72.
9. Deisenhammer EA, Kemmler G, Parson P. Association of meteorological factors with suicide. *Acta Psychiat Scand* 2003;**108**:455–9.

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